

General intelligence versus multiple intelligence: Social and cognitive development in visual arts education

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Abstract

This research discusses implementing general intelligence theory in the Visual Arts Education Department to improve students' creativity from social and cognitive development. The two most relevant approaches in visual arts education are general intelligence and multiple intelligence. This research selects general intelligence theory as the primary approach rather than multiple intelligence theory. Therefore, social development and cognitive development are discussed. This research method is a type of literature review, and the topic of study includes social development, cognitive development, growth mindset, rewards, intervention, and feedback. Moreover, the sources came from book chapters and articles from Elsevier, Sage, Routledge, etc. As a result, the findings of this research show (1) there are five general intelligence and nine multiple intelligence approaches; (2) Social development shows two approaches: active learning which consists of analyzing, defining, creating, and evaluating, while critical thinking consists of reading, writing, interpreting, and testing; (3) Cognitive development shows four approaches; growth mindset that consist of change perception and hardworking, rewards consist of extrinsic and intrinsic motivation, the intervention consists of consultation and motivation, and finally feedback consists of direct feedback and immediate feedback. Using a psychological approach to general intelligence, this teaching method in Visual Arts Education will improve students' creativity.

Keywords: general intelligence, multiple intelligence, social development, cognitive development, visual arts education

Kecerdasan umum versus kecerdasan ganda: Perkembangan sosial dan kognitif dalam pendidikan seni rupa

Abstrak

Penelitian ini mendiskusikan implementasi dari jeneral intelligen dalam Program Studi Pendidikan Seni Rupa, yang bertujuan untuk mengembangkan kreativitas mahasiswa dari perkembangan sosial dan kognitif. Dalam pendidikan seni rupa, terdapat dua pendekatan yang paling relevan yaitu kecerdasan umum dan kecerdasan ganda. Dalam penelitian ini, teori kecerdasan umum dipilih sebagai pendekatan utama daripada teori kecerdasan ganda. Oleh karena itu, perkembangan sosial dan perkembangan kognitif didiskusikan. Metode penelitian ini adalah jenis tinjauan literatur, topiknya terdiri dari perkembangan sosial, perkembangan kognitif, pikiran berkembang, penghargaan, intervensi, dan umpan balik. Kemudian, sumbernya berasal dari buku chapter dan artikel dari journal bereputasi internasional seperti Elsevier, Sage, Routledge dan seterusnya.. Sehingga, temuan penelitian ini menunjukkan; (1) terdapat lima pendekatan kecerdasan umum dan sembilan pendekatan kecerdasan ganda; (2) Dalam perkembangan sosial terdapat dua pendekatan yaitu pembelajaran aktif yang terdiri dari menganalisis, menentukan, menciptakan, dan mengevaluasi, sementara pemikiran kritis terdiri dari membaca, menulis, menafsirkan, dan menguji; (3) Perkembangan kognitif menunjukkan empat pendekatan yaitu pola pikir berkembang yang terdiri dari mengubah persepsi dan kerja keras, imbalan yang terdiri dari motivasi ekstrinsik dan intrinsik, intervensi yang terdiri dari konsultasi dan motivasi, dan akhirnya umpan balik yang terdiri dari umpan balik langsung dan umpan balik segera. Metode pengajaran dalam Pendidikan Seni Rupa dari pendekatan psikologis kecerdasan umum akan meningkatkan kreativitas siswa.

Kata Kunci: kecerdasan umum, kecerdasan ganda, perkembangan sosial, perkembangan kognitif

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INTRODUCTION

General intelligence and multiple intelligence are two theories that described intelligence. Unfortunately, there are misconceptions between intelligence and talent. Being intelligent is different than being talented, and this is how Gardner's theory of multiple intelligence is too broad and represents talents but not intelligence. Unfortunately, a biased approach to visual arts education often results in a lack of emphasis on the method of teaching. For example, the idea of multiple intelligence theory that is proposed by Howard Gardner has created multiple perspectives that students have eight intelligence and they can choose one of them (Gardner, 1986; Gardner & Connell, 2000; Howard, 2011a, 2011b). However, general intelligence is something that any student can get by working hard (Deary et al., 2007; Martin et al., 2015; Spearman, 1904; Stankov & Lee, 2017), and it is easy to confuse the difference between intelligence and ability. Hence, teachers must utilize the right method to nurture students' potential by using general intelligence. Moreover, students must develop general intelligence, as it allows them to reexamine their understanding of creativity, which can ultimately enhance their confidence and performance in college.

Therefore, to address this issue, this research intends to develop a teaching method for Visual Arts Education students based on general intelligence theory rather than multiple intelligence theory. Thus, intelligence theory will utilize social and cognitive development theories. Regarding social development, the focus will be on two methods: an active learning approach and critical thinking. For cognitive development, it will employ the growth mindset theory, which emphasizes reward systems and growth mindset interventions, and incorporate feedback as a more inclusive learning process.

First and foremost, social development aims to enhance the quality of learning socially to harness students' general intelligence. In visual arts education, this emphasizes the importance of nurturing the well-being of each art student. By creating a supportive and inclusive environment, art educators can help students develop their artistic skills, explore their creativity, and achieve their full potential. Hence, the two essential methods of teaching in social development are active learning and critical thinking. For Visual Arts Education students, the teaching method should emphasize these approaches to cover interpersonal, substantive, and pedagogical relationships, (Kaufman et al., 2016). The teacher's method of teaching students has a significant impact on improving their creativity skills in VAED.

Active learning is a fundamental approach to learning, as it aims to develop student's skills and understanding. In active learning, students will analyze, define, created evaluate. Students in active learning spend 70 percent of what they say and write than percent of what they do. According to (Persky et al., 2013), higher levels can be achieved through active learning, and it is a flexible approach that can be adapted to different situations regarding the number of students and classes. Following this, critical thinking is another crucial element in social development. To think critically students in VAED must read and write as well as interpret artworks. One of best the practices to do this is for the students to explore reading materials critically and actively, using practice testing. practice testing is the best learning technique for developing reading skills (Coe et al., 2014; Dunlosky et al., 2013; Roediger & Pyc, 2012).

Secondly, cognitive development is a study of psychology that focus on students' development. It deals with information processing, conceptual resources, perceptual skill, and language learning, and soon, which develop students' brain and cognitive psychology (De Ribaupierre, 2015; Lehman et al., 1981). Thus, In VAED, one of the most common methods in cognitive development is a growth mindset. It is crucial to adopt the growth mindset theory to enhance creativity through rewards, growth

mindset interventions, and feedback. The notion that talent is innate and related to a particular subject in VAED is problematic because it hinders students' ability to improve or achieve results.

To begin with, it is essential to change this perception by promoting the growth mindset theory. This approach has a significant impact on learners' behavior and their outcomes in social development. Believing in incremental self-belief can enhance individuals' skills through hard work since human thought is malleable and can improve intelligence (Chao et al., 2017; DeBacker et al., 2018; Dweck, 2015; Seaton, 2018). Furthermore, Dweck (2015) emphasizes that developing one's intelligence implies considering it as a dynamic and malleable quality that can be cultivated through effort. Therefore, promoting an incremental self-belief mindset is crucial in engaging learners to believe that their mindset strategies can be improved through studying and are not innate.

Next, motivating students using the rewards approach is effective. Specifically, the use of goal-setting rewards is recommended, as it can encourage students to study based on their interests and with the prospect of meaningful rewards. Given that learners have different motivations for studying, it is essential to teach according to their psychological beliefs to cultivate their interest in the subject matter. According to Chao et al. (2017), rewards can help individuals improve their performance and learn how to achieve positive outcomes, such as academic achievement.

Moreover, a growth mindset intervention is necessary. The strategy involves dedicating around ten minutes each week to encourage students and motivate their performance. Research has shown that promoting incremental belief can significantly benefit students with lower abilities in class. Allocating ten minutes to an hour each week can enhance students' motivation to prioritize effort and strategies in studying, leading to a shift in perception toward understanding that developing skills and gaining good results requires time and effort (Burnette et al., 2020, 2022; Yeager et al., 2022; Yeager & Dweck, 2020).

Furthermore, it is crucial to utilize feedback as a teaching method. Educators should reflect on how they construct feedback and when they give it to improve students' learning processes. Coe et al., (2014) argue that feedback must make sense for learners, enabling them to see the connections between their current understanding and the learning goal. Therefore, to provide meaningful feedback, educators must establish links between what students already know and what they need to achieve in a lesson.

Countless research on general intelligence and multiple intelligence have been conducted to investigate the best method of teaching. In general intelligence, research on students' is analyzed and reviewed in both social and cognitive development. However, the previous research on social development (Kaufman et al., 2016) and cognitive development (Lehman et al., 1981) are generic and not specifically designed for certain specialties. Therefore, this research emphasizes two critical questions as research problems to improve significantly VAED by implementing a psychological approach to improve creativity. 1) What are the differences between general intelligence and multiple intelligence theories? 2) How to create a method of teaching based on general intelligence by implementing social and cognitive development for students who study VAED at the university level?

METHOD

In this research, the method of this research is a review of the literature. Snyder (2019) states that a literature review is a powerful research method when it comes to providing an overview of multiple areas of study in which the research is disparate and interdisciplinary. Hence, this research will be in line with this research method to provide an overview of certain research problems in different studies. Moreover, the many empirical studies and findings will provide a wider perspective than a single study. In this literature review, topics that have not been empirically researched will be analyzed to improve students' creativity who study visual arts education are analyzed and discussed.

Understanding social and cognitive ability will have a significant improvement on students who study VAED. Social development allows educators to realize the importance of active learning and critical thinking skills. These concepts are designed to improve students' intellectual ability that consists of creativity rather than the multiple intelligence theory by Howard Gardner. Thus, social development and cognitive development theories will improve students' Intelligence on their creativity.

Furthermore, the articles cited in this article consist of intelligence theories especially related to social and cognitive development from reputable international book chapters, and journal articles such as Elsevier, Sage, Routledge, and so on. Most of the articles are from the last five years' publications,

and there are also lists of the most cited and related articles from more than five years ago. The selection of the articles in educational Psychology is highly related to compare between the most up-to-date theories and existing theories. The selections of articles consist of multiple theories on Psychology to develop creativity. The total number of articles is forty-eight (48) articles that mostly related to educational psychology to develop teaching methods in Visual Arts Education.

The sample for this research consists of the most up-to-date journal articles relevant to the topic. These articles are carefully selected to ensure they provide insights into various aspects related to improving students' creativity in VAED. The topic of study include social development, cognitive development, growth mindset, rewards, intervention, and feedback are then analyzed based on the topic of study. This method is to develop students' creativity in VAED. The design of this study includes a study on psychology that is implemented in VAED.

The data collection and analysis for this research are collected through a systematic review of journal articles. The researcher searches for and selects articles that are the most recent and relevant to the topic of improving students' creativity in VAED. The selected articles are then analyzed and synthesized to identify common themes, patterns, and insights related to social development, cognitive development, growth mindset, rewards, intervention, and feedback in relation to creativity in VAED. The analysis involves carefully reading and interpreting the content of the articles, extracting relevant information, and organizing it cohesively. The results are then compared and contrasted to identify similarities, differences, and emerging trends. The analysis also includes a critical evaluation of the methodologies, limitations, and implications of the reviewed studies to provide a comprehensive understanding of the topic.

In conducting this research, ethical considerations are paramount. The researcher ensures that all selected journal articles come from reputable sources and have undergone a rigorous peer-review process. Proper citation and referencing practices are employed to acknowledge the original authors' contributions and avoid plagiarism.

The researcher respects intellectual property rights and uses the reviewed articles solely for analysis and discussion. The confidentiality and privacy of individuals mentioned in the reviewed articles are maintained, and no personal identifying information is disclosed. Furthermore, the researcher adheres to ethical guidelines regarding the use of human subjects in research. As this research involves a review of existing literature, it does not involve direct interaction with human participants or the collection of personal data. Hence, no informed consent or ethical approval is required for this specific study.

The research is conducted with integrity, honesty, and transparency, following the principles of academic and research ethics to ensure the reliability and credibility of the findings and the research process.

RESULTS AND DISCUSSION

Result

This research begins with the comparison of the two most discussed theories of multiple intelligence and general intelligence. This research highlights the significance of general intelligence rather than multiple intelligence theory. Then, drawing from the relationship between general intelligence and social and cognitive development, this research explains the significance of the implementation of VAED specialization

These research results describe components of general intelligence and multiple intelligence. By comparing the two theories based on their approach. First, Table 1 explains five components of general intelligence. General intelligence consists of five approaches namely; working memory, visual-spatial processing, fluid reasoning, knowledge, and quantitative reasoning. General intelligence theory was proposed by Spearman (1904) more than a century ago. Then, the multiple intelligence theory consists of nine approaches namely, naturalistic, musical, logical-mathematical, existential, linguistic, bodily-kinaesthetic, intra-personal, and spatial intelligence. This theory of multiple intelligence was proposed by (Gardner, 1986; Howard, 2011a). This theory has been improvised several times, previously it was less than nine, as time goes by it is now nine approaches.

Figure 1 shows that General intelligence identifies several types of intelligence that contribute to

a person's overall intellectual ability.

Table 1. *General Intelligence Theory vs Multiple Intelligence Theory*

No	General Intelligence	No	Multiple Intelligence
1.	Working Memory	1.	Naturalistic
2.	Visual-Spatial processing	2.	Musical
3.	Fluid Reasoning	3.	Logical-mathematical
4.	Knowledge	4.	Existential
5.	Quantitative Reasoning	5.	Interpersonal
		6.	Linguistic
		7.	Bodily-kinaesthetic
		8.	Intra-personal
		9.	Spatial intelligence
Total	5 theories		9 theories

These Figure 1, include first, working memory, which involves the ability to briefly retain and manipulate information, such as recalling a list of items. Secondly, visual-spatial processing refers to the ability to interpret and manipulate visual information, such as assembling puzzles or copying complex shapes. Thirdly, fluid reasoning is the capacity to think flexibly and solve problems, while quantitative reasoning refers to the ability to solve mathematical problems. Next, knowledge represents a person's broad understanding of various subjects, often referred to as crystallized intelligence. Finally, quantitative reasoning refers to an individual's ability to solve numerical problems.

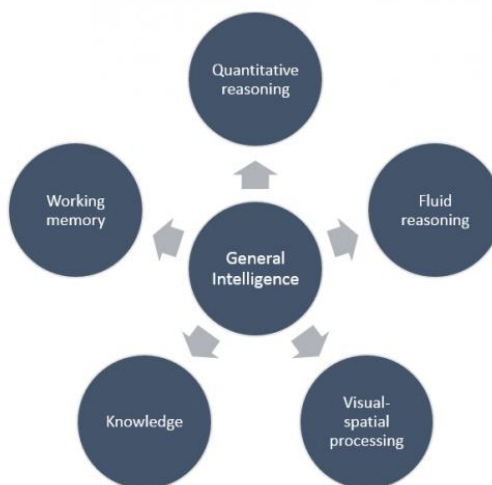


Figure 1. Five general intelligence theory (from psychestudy.com)

Figure 2 shows Howard Gardner's theory of multiple intelligences identifies nine types of intelligence, each with its own unique set of characteristics. First, naturalistic intelligence involves an appreciation for and connection with nature. Second, musical intelligence involves a strong appreciation for music, recognizing musical patterns, and composing music. Third, logical-mathematical intelligence involves problem-solving skills, abstract thinking, and scientific experimentation. Fourth, existential intelligence involves the capacity to ponder deep questions about human existence. Each intelligence type offers different career options. Fifth, interpersonal intelligence involves the ability to understand and interact well with others. Followed by bodily-kinaesthetic intelligence involves physical coordination, hands-on learning, and remembering by doing. Next, linguistic-verbal intelligence involves strong skills in reading, writing, and public speaking. After that, intrapersonal intelligence involves self-awareness and reflection. Lastly, visual-spatial intelligence involves the ability to interpret pictures, charts, and patterns.

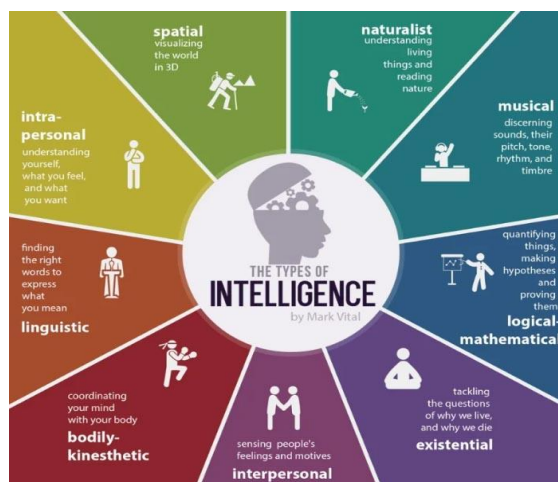


Figure 2. Nine (9) multiple intelligence theory (from learn.podium.school)

Table 2 describes the results of implementing social development and cognitive development in VAED. The results show that social development consists of two approaches namely active learning and critical thinking. In active learning, students will analyses, define, create, and evaluate, while in critical thinking students will focus more on reading, writing, interpreting artwork meaning, and testing to recall memory. Moreover, in cognitive development, there are four approaches namely growth mindset, rewards, intervention, and feedback. The table explains more in detail to how implement the method in teaching VAED.

Table 2. Social Development and Cognitive Development in Visual Arts Education

Social Development	Method of Teaching in Visual Arts Education	Cognitive Development	Method of Teaching in Visual Arts Education
Active Learning (70 percent writing what students say, 90 percent doing their activity)	<ul style="list-style-type: none"> Analyzing simple shapes such as circles, rectangles, and squares Define the shape into more complex shapes like dodecahedrons and geometrical shapes Create or draw shapes based on their analysis and definition Evaluate their process by writing and discussing with their peers or lecturers 	Growth Mindset	<ul style="list-style-type: none"> Change students' perceptions by promoting the growth mindset theory Enhance students' intelligence through hard work
		Rewards	<ul style="list-style-type: none"> Extrinsic motivation; Meaningful rewards
Critical Thinking	<ul style="list-style-type: none"> Reading multiple theories Writing Critically Interpreting artworks critically Testing to recall memory 	Must emphasize the importance of hard work and perseverance	<ul style="list-style-type: none"> Intrinsic motivation; storytelling and encouraging creativity
		Intervention	<ul style="list-style-type: none"> Dedicating around ten minutes each week to encouraging students Motivate students' performance
		Feedback	<ul style="list-style-type: none"> "Where am I going?", "How am I going?", and "Where to next?". Immediate feedback and delayed feedback are based on timing.

Overall, the table highlights various teaching methods that can be employed in VAED to promote social and cognitive development. It emphasizes the importance of active learning, critical thinking, a

growth mindset, rewards, intervention, and feedback as effective strategies for enhancing students' creativity and intelligence in the visual arts education context. This approach is useful when implemented in VAED because the design of this approach is supported by countless empirical studies in psychology especially studies on human development.

In social development, two approaches are proposed to improve students' level of creativity. First, active learning involves students actively participating in their learning process. It includes tasks such as writing what students say (70% of the time) and engaging in hands-on activities (90% of the time). The specific method mentioned is analyzing simple shapes like circles, rectangles, and squares. This approach encourages students to interact with the subject matter and develop their understanding through active engagement. Second, critical thinking aims to foster students' potential through reading multiple theories and interpreting artworks critically. Students are encouraged to analyze and evaluate different perspectives, enabling them to develop their critical thinking skills.

Moreover, in cognitive development, four approaches are proposed as follows: First, the growth mindset aims to change students' perceptions by promoting the belief that intelligence can be developed through hard work. Teachers emphasize the importance of effort and perseverance to enhance students' intelligence. Second, rewards highlight the use of rewards to motivate students. Two types of motivation are mentioned: extrinsic motivation, which involves providing meaningful rewards for students' achievements, and intrinsic motivation, which is fostered through storytelling and encouraging creativity. Next, the intervention involves dedicating around ten minutes each week to encouraging students. The purpose is to motivate and intervene in students' performance, helping them overcome challenges and improve their skills. Finally, feedback plays a crucial role in cognitive development. The table mentions two types of feedback: immediate feedback and delayed feedback. The timing of the feedback is based on specific criteria, such as when it is most beneficial for student learning. The feedback should address the questions "Where am I going?", "How am I going?", and "Where to next?", providing guidance and direction to students.

Discussion

The purpose of this article is to develop teaching methods for students in Visual Arts Education utilizing general intelligence instead of multiple intelligence theory. Table 2 has provided a brief explanation of how to implement general intelligence that is described from social and cognitive development. This is an overview of the application of general intelligence in VAE study, and the design is drawn from empirical studies in social and cognitive development. From then, the theories are developed into a practice that consists of active learning and critical thinking skills in social development. And cognitive development consists of four approaches namely growth mindset, rewards, intervention, and feedback. The selections of this method of teaching have been proven to develop students' creativity in learning. Some more theories and methods can be used to improve teaching methods, but for VAE, the selections of theories have been carefully analyzed in this article. For an overview of knowledge, this presentation of teaching methods especially in Indonesia is considered to be the first article that described in detail the implementation of general intelligence in Visual Arts Education.

This research reviewed research on general intelligence and multiple intelligence theories. The two theories have been discussed for more than a century, and have contributed to many disciplines. In this research, the researcher begins to describe and compare the theories from their sources as well as from secondary sources from respected researchers. Then, the relationship between general intelligence and social-cognitive development is explored to formulate a method of teaching for VAED. The results show a specific method of teaching for students who study Visual Arts Education, drawing from general intelligence theory.

First, the review begins with a discussion between general intelligence and multiple intelligence theories. Multiple intelligence that was proposed by Howard Gardner has been widely implemented by many educators in multiple disciplines. Although recent studies on multiple intelligence have been supported by many researchers (Akkuzu & Akçay, 2011; Davis et al., n.d.; Gardner & Moran, 2006; Syarifah, 2019; Wulansari et al., 2022). The problem with this theory is that it is too broad and there is little empirical research that supports this theory (Almeida et al., 2010; Burhan et al., 2010). Therefore, this research implements general intelligence rather than multiple intelligence. The reason for this is that general intelligence fosters educational achievement and engages students to learn by working hard on any

areas that students wish to learn (Deary et al., 2007; Martin et al., 2015; Spearman, 1904; Stankov & Lee, 2017).

Second, general intelligence and social and cognitive development have a relationship in the process of acquiring knowledge. In social development, the study on active learning and critical thinking has been previously discussed. Freeman et al., (2014) suggest that active learning improves students' results in all categories, whether in big or small groups, or medium-sized classes. This approach is particularly suitable for Visual Arts Education, where learners are mostly involved in active activities both theories and practices. For instance, in a drawing course, students can start by analyzing simple shapes such as circles, rectangles, and squares, and then define the shape into more complex shapes like dodecahedrons and geometrical shapes to explore the dynamics of patterns in nature. Next, students create or draw shapes based on their analysis and definition. Finally, students need to evaluate their process by writing and discussing with their peers or lecturers. Ultimately, the goal is to enhance students' creativity in VAED, especially undergraduate students in VAED who have different methods and interests in learning.

Moreover, in previous researchers critical thinking can be developed through practice testing, students can recall their knowledge based on the reading materials, including short-answer questions, fill-in-the-blank questions, and so on (Dunlosky et al., 2013). Coe et al., (2014) suggest techniques like reviewing studied material, giving students sufficient time to practice, and promoting engagement to foster new knowledge. Roediger & Pyc (2012) also argue that recalling or reviewing while studying is essential, and educators should clarify why certain facts or ideas are correct. Hence, in VAED it is crucial to add reading materials such as ontology that critically challenge students' thoughts. And provide them with multiple questions each month to recall students' memories in VAED. Subsequently, this approach can improve learners' understanding especially when students write and interpret the meaning of artworks.

Above all, the primary focus of teaching should be on acknowledging the diversity of students' learning. De Ribaupierre (2015) suggests that educators should recognize the differences in students' capacity development due to their diversity. To create an equal and fair learning environment, teachers must integrate diverse approaches that include both active and critical thinking approaches. Moreover, combining these two aspects in the classroom can lead to better outcomes. Therefore, it is recommended to use two methods for teaching. The first method emphasizes intuitive and experiential skills and involves active learning, while the second method emphasizes critical thinking skills such as reading.

In terms of cognitive development, much research on growth mindset, rewards, intervention, and feedback has been done to harness students' optimal potential. Quality can be shaped and improved throughout their college experience, which can have a lasting impact. This can be achieved by adopting a growth mindset, (Chao et al., 2017; Ganimian, 2020; Han & Stieha, 2020; Limeri et al., 2020; Yeager & Dweck, 2020; Zeeb et al., 2020). By doing so, individuals are more likely to view the college journey as a challenge rather than a difficulty, as "difficulty" often suggests an Entity self-belief, while "challenge" implies an incremental self-belief. This mindset can motivate individuals to try harder, as noted (Seaton, 2018). As a result, students can be optimistic about their ability to improve their skills and see mistakes as part of the learning process. Thus, individuals with low self-esteem about their drawing abilities should be taught to change their perception. Overall, this theory will raise awareness among individuals that they can enhance their intelligence through hard work (Dewanti & Putra, 2022; Setiawan et al., 2020).

The reward is one of the most common and easiest approaches to teaching. Most teachers can easily reward students for getting high marks. However, rewards must emphasize the importance of hard work and perseverance, which are fundamental principles of a growth mindset. Rewards systems have shown a significant impact in motivating and generating better educational systems (Assari et al., 2020; Haryanto et al., 2021; Iqbal et al., 2021). Baer (2012) distinguish between two types of rewards: extrinsic motivation (e.g., meaningful items) and intrinsic motivation (e.g., the joy of engaging in an activity). Using only one type of motivation may not be effective for all students due to individual diversity. Therefore, it is recommended to use both intrinsic and extrinsic motivation simultaneously in class to provide a better advantage for learners. (Baer, 2012) suggests that intrinsic motivation, such as storytelling and encouraging creativity, can be effective for students interested in developing their creative skills. Meanwhile, meaningful rewards can be used to motivate individuals who have difficulty

engaging in the subject matter.

Regarding growth mindset intervention, there is a conflicting argument by (Seaton, 2018) stating that a growth mindset intervention can only yield short-term effects, and there is no long-term impact. Nevertheless, this argument is questionable since an intervention conducted for at least ten minutes every week is likely to have both direct and indirect positive outcomes for individuals. Once students receive strong motivation from their lecturer's intervention, they are likely to have a clearer purpose that will improve their overall outcome. Furthermore, it is essential to note that building a relationship between teacher and students can optimize the intervention (Balan & Sjöwall, 2023; Brez et al., 2020; Yeager & Dweck, 2020).

Finally, Feedback is one of the most important methods in teaching. Previous research has been done by (Hattie & Timperley, 2007) who suggests three fundamental questions that educators should consider when constructing feedback: "Where am I going?", "How am I going?", and "Where to next?". These questions aim to design feedback in a more explicit goal-oriented and continuous manner, which promotes improvement during learning processes. Furthermore, Educators should also consider the timing of feedback delivery. (Hattie & Timperley, 2007) classify two ways of delivering feedback based on timing: immediate feedback, which is given during classroom learning for simple theories, and delayed feedback, which is a more complex approach that requires more time to make sense and is typically provided through testing systems. Thus, educators can provide direct feedback in the classroom to assist students in understanding theory and delay feedback to allow for reflection on their understanding during learning. Discussion on feedback has been receiving enormous success since Hattie & Timperley first published its paper, and many researchers and educators around the world implemented the theory into practice (Chernikova et al., 2020; Dawson et al., 2019). as can be seen in its citation which achieved a total citation of 17.669. This is considered to be one of the biggest success theories in education, but the theory also received criticism if not minor that this trend has been creating a cult of gurus (Bergeron & Rivard, 2017). However, Feedback theory has greatly contributed to the educational field in many areas and has proven to be significant.

Therefore, it is crucial to adopt the cognitive development approach in teaching to facilitate students' creativity in visual arts education. This is because there exists a correlation between creativity and cognitive development, as noted by (Lehman et al., 1981). Thus, it is vital to teach students using the cognitive development approach to enhance their creativity in visual arts, (Steinberg, 2000). These scholars further noted that in adolescence, abstract thinking is maturing, which implies that they can think more complexly.

CONCLUSION

General intelligence theory improves students' creativity in Visual Arts Education courses. There are two most important theories in Visual Arts Education namely general intelligence and multiple intelligence theories. These two theories shared the most relevant approach in VAE, but general intelligence provided a more holistic approach in this research. Then, to support the implementation of general intelligence in VAED at the university level, this research describes social development and cognitive development to be implemented in VAED. In social development, the two most related approaches are an active learning and critical thinking approach, while in cognitive development there are growth mindset, rewards, intervention, and feedback. This method is vital to improve students' creativity based on their hard work rather than believing that they have certain talents.

To enhance students' creativity in Visual Arts Education courses, educators should prioritize general intelligence theory, incorporate social and cognitive development, promote hard work over talent, foster holistic development, provide professional development, and encourage further research. These suggestions help create a conducive learning environment that enhances creativity, promotes overall development, and helps students reach their artistic potential.

Educators should implement general intelligence theory by designing activities that promote critical thinking, problem-solving, and creativity. They should also embrace a balanced approach by recognizing multiple intelligence theories and creating inclusive learning environments. Foster social development through active learning, collaborative projects, and peer interactions. Enhance cognitive development by promoting a growth mindset, using rewards, interventions, and constructive feedback.

Lastly, shift the focus to effort and encourage students to invest time and effort in their creative pursuits to foster a growth-oriented mindset.

Implementing general intelligence theory, integrating social and cognitive development approaches, and emphasizing effort in VAE courses lead to improved creativity. It equips students with essential skills and mindsets for creative expression and problem-solving. Recognizing multiple intelligence theories creates an inclusive environment where diverse student abilities thrive. Integrating social and cognitive development fosters holistic development, including social interaction, critical thinking, and a growth mindset. Promoting a growth mindset and providing meaningful rewards and feedback engage and motivate students. Emphasizing effort cultivates a mindset of lifelong learning and a passion for growth and creativity. These recommendations help create a supportive learning environment that fosters creativity and personal growth in the visual arts.

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